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attitudes to European integration**

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**NATIONS WILL FALL? REVISITING THE ECONOMIC DETERMINANTS
OF ATTITUDES TO EUROPEAN INTEGRATION**

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ABSTRACT

A model is constructed, using Eurobarometer data, of the propensity of individuals to favour European integration. A key role is played by economic considerations: countries in which income *per capita* is relatively low contain individuals that are more positive in their attitudes to Europe; growth is associated with more positive attitudes; economic fluctuations, above a threshold, are associated with more negative attitudes. Correcting for multicollinearity increases the explanatory power of many variables, and weakens the power of country dummies.

Keywords: Europe, integration
JEL Classification: F15, P16

THE ECONOMIC DETERMINANTS OF ATTITUDES TO EUROPE

It is now almost half a century since the Treaty of Rome was signed, bringing into being what is now the European Union. The original group of six countries (France, Germany, Italy, and the Benelux countries) has expanded into 25, and in that expansion, the homogeneity of the grouping has become somewhat rarefied. The first expansions pushed the boundaries of the European Union first to the north and later to the south, and with the accession of new member states in 2004 the boundaries are now being pushed eastwards. In terms of political heritage and economic affluence, the expansions have represented a substantial broadening of experience.

Public sentiment toward the European Union would appear to vary quite considerably across member states. Within the relatively homogenous group of six founder states, attitudes have remained broadly positive¹, while in some, but by no means all, new members there is greater resistance towards European integration. This would appear to be particularly pronounced in Denmark and in the United Kingdom, and characterised by government decisions such as the maintenance of separate currencies. Public attitudes towards European integration are likely to be shaped by a large number of factors, including history, politics, culture, sociological issues and, of course, economics.

There are two issues in particular that this paper will address which have not been covered in the received literature. First, preliminary work has identified nonlinearities in the relationship between respondents' ages and the propensity with which they

¹ Though attitudes here seem now to be hardening, with emerging resistance to the proposals for a European constitution.

favour European integration. The pooled nature of the data that are used in the present study allow consideration of this alongside the identification of cohort effects. Secondly, the analysis underpinning this paper allows a somewhat more sophisticated consideration of the impact of macroeconomic factors on respondents' views on the European project than has been possible heretofore. A particular innovation in the paper is to use a shrinkage method due to Le Cessie and Van Houwelingen (1992) in order to alleviate concerns about multicollinearity in the logit estimator.

The remainder of a paper takes the following form. The next section reviews the literature. This is followed by a description of the data that are used in the study; these come primarily from a source that has been used to study attitudes to European integration in the past - namely the Eurobarometer. But some important macroeconomic information pertaining to each country in the study is grafted onto these data from elsewhere. The following section reports the results of the analysis, and finally conclusions are drawn.

Received literature

Despite the huge economic significance of the European Union - a body which has in the past been called the European Economic Community, and which remains first and foremost an economic trading bloc, customs union, and single market - the vast majority of work in this area has been published by political scientists rather than economists. This being so, it is perhaps unsurprising to observe that political explanations of attitudes toward European integration have dominated the models that

have been developed. For example, Anderson (1998) has found that the political party supported by an individual is the most powerful determinant of support for the European Union. Such findings have been refined in more recent work by Ray (2003a), who finds that support for the EU is more polarised in countries where political parties are relatively polarised, where the EU is an important policy issue, and where political parties lack internal divisions on this issue. In a separate paper, Ray (2003b) finds that people who support the current party of government are, other things being equal, more likely to support integration. Some of Ray's other findings are particularly interesting in the context of results to be reported later in the present paper - these include the findings that both income and education tend positively to influence the propensity that an individual will have favourable attitudes towards European integration.

Nevertheless, political variables are not the only factors that have been found to determine attitudes to Europe. Gabel (1998) finds that males are significantly more likely to support European integration than are females. Moreover, he finds that attitudes towards Europe are becoming more favourable over time, while those countries that were original members of the common market more strongly support European integration than do later members, especially the United Kingdom and Denmark. These results echo earlier work by Janssen (1991) which compares the evolution over time of attitudes to Europe in four main western European countries. While the proportion of survey respondents sympathetic to European integration has risen dramatically in France and Italy since the early 1950s, the increase in Germany (where general levels of support been extremely high) has been relatively modest, and there has been no change at all in support for the European Union within the United

Kingdom (where only a small majority express support). Janssen tests the theory that countries in which social mores provide a post-materialist climate are more likely to support European integration than others. He finds limited support for this hypothesis, with the United Kingdom being perceived to have a low score in terms of post-materialist value climate and also having relatively little support for the European programme. But comparisons across other pairings of countries in his study provide less compelling evidence. Moreover, one might question the hypothesis that support for European integration is motivated by higher values than materialism, not least when a primary and very explicit motivation for projects such as the single European market and the single European currency has been economic.

Further work on the relationship between attitudes to Europe and more general country-specific psychological characteristics has been conducted by Pepermans and Verleye (1998). These authors identify three psychological variables which they find to be significant determinants of the extent of support for European integration within each country. The first of these is a measure of national pride, which is perceived to be high in Germany and the Netherlands, but low in Italy, Portugal and Greece. The second measure concerns self-confident open-mindedness; this variable takes high values in the Benelux countries and in Germany, but a relatively low value in Ireland. But the third measure is described as progressive non-nationalistic attitudes, a variable which takes a high value in Spain and Ireland but low values in Portugal and United Kingdom. While interesting, there may be some circularity involved in the definition of these stereotypes; it is difficult to see how progressive non-nationalism can be viewed as a determinants, as opposed to a manifestation, of support for the euro.

There has, very recently, also emerged the literature on the impact that political events, such as European summits, can have on attitudes toward European Union. Positive media coverage of such events have been established by Semetko *et al.* (2003) to influence attitudes in a favourable direction.

The most direct antecedent to the current work, however, is a paper by Eichenberg and Dalton (1993), in which support for EU integration is modelled as a function of, amongst other things, the recent economic experience of countries for which data are available. Such experience is measured in terms of inflation rates, GDP, and unemployment rates. Of these, only inflation contributes significantly to the explanatory power of the equation, with high domestic inflation reducing support for integration. Somewhat surprisingly, these results contrast with later work by Anderson and Kaltenthaler (1996), who finds that respondents in countries with a relatively high level of GDP per capita are significantly more likely to support integration,² while unemployment and inflation are both significantly negative influences on such support.

Meanwhile, Gabel and Whitten (1997), on the other hand, argue that Eichenberg and Dalton misspecified the relationship between economic variables and attitudes towards European integration. They contend that the use of actual macroeconomic data is inappropriate since people's perceptions of the macroeconomic situation in a country may be inaccurate; what matters therefore is the perceived, rather than the actual, macroeconomic situation. They find that subjective personal assessments, both of the national economic situation and of the respondents' own economic

² This result is in sharp contrast also to both work by Mahler *et al.* (2000) and results reported in the sequel.

situation, positively and significantly influence the propensity for an individual to deem membership of the EU beneficial. Similar results have been obtained by Anderson and Reichert (1996).

In another study Gable and Palmer (1995) provide evidence to suggest that individual support for European integration is positively related both to potential personal benefit from the existence of liberalised markets, and to potential national benefits in terms of security and trade. This paper also includes an interesting variable that has not been a feature of other works, namely World War II deaths *per capita*. The authors find that countries in which the fatality rate was unusually high tend to be more supportive than others of European integration.

A further study that examines the relationship between economic variables and support European integration is that of Mahler *et al.* (2000). This study confirms the findings of Eisenberg and Dalton that respondents in high inflation countries are less likely than those elsewhere to support integration, but also finds other economic variables to be significant. In particular support for integration is higher in those countries with high levels of trade with other EU states, and in countries with high net budgetary returns. On the other hand, respondents in countries with high levels of real GNP per capita are, other things being equal, less likely to support European integration.

The above studies all draw heavily on opinion surveys – and in that respect the present study belongs to the same family. It is worth noting, however, that some very recent research has focused instead on analysis, at regional level, of the results of

referenda that have been conducted in various EU and EU candidate countries on matters such as the adoption of the Maastricht treaty (Meon, 2002), and EU membership (Vlachos, 2004; Doyle and Fidrmuc, 2004). These studies confirm that regional economic conditions influence people's voting behaviour, with richer areas, areas where the general level of education is relatively high, and those areas whose industry mix is skewed in the direction of strong trading links with the EU being relatively more supportive of the EU. Inevitably, however, a price is paid for the high level of aggregation employed in these analyses, and the coefficients on many of the variables are estimated imprecisely. While studies based on referenda certainly have an attraction in that they are based on actual voting behaviour, the disaggregated information used in studies based on detailed individual data remains appealing.

In the remainder of this paper, I shall investigate further the economic determinants of attitudes towards Europe. In common with many earlier studies, I shall use data on individuals collected by the Eurobarometer. To be specific, I use the Mannheim Eurobarometer Trend File which provides data collected in all Eurobarometer studies conducted between 1970 and 1999. Each of these studies provides microdata on individuals in all member states, examining their attitudes towards Europe, political issues more broadly, and collecting data also on economic variables. I graft onto these data information about macroeconomic conditions within each member state, so that the influence of the latter on attitudes to Europe can be assessed. The resultant dataset makes it possible to accommodate in the model a good number, but certainly not all, of the issues discussed in the survey above. The analysis is conducted at individual level, but it is worth noting that at the level of the country the data used here represent a panel. By using the traditional panel data techniques, it is possible to

separate out the impact of macroeconomics variables, on the one hand, and of country-specific effects on the other.

In the next section the data will be described. This will be followed by an analysis of the results obtained using statistical methods. The paper ends with a conclusion and suggestions for further research.

Data

The data used in the present analysis come from the Eurobarometer, and are drawn from surveys conducted between 1985, the year Spain and Portugal entered the European Union, and 1999, the endpoint of the Mannheim trend file. Some of the surveys have been omitted from the dataset used here on the grounds that they lack information about key variables; to be specific, those surveys which did not collect data on respondents' attitudes to Europe and those which did not collect data on household income and age are omitted.³ Nevertheless, this leaves some 34 surveys over the 14 year period from which the data used in the present study are drawn. The Eurobarometer series include data from interviews with well over a million respondents; for the reasons noted above, not all surveys are included in the present study, but nevertheless the results below are drawn from the analysis of observations which refer to over 230000 individuals.

³ Data on the perceived benefit of membership of the European Union are missing from surveys held in Autumn 1990, Spring 1992, Spring 1993, Spring 1995, Autumn 1995, Autumn 1998 and Spring 1999, while information on income is missing from surveys held in Autumn 1994 and Spring 1995, and information on respondents' age and education is absent from surveys held in Spring 1999.

A complete run of data is available over this period only for 10 countries, namely France, Belgium, the Netherlands, Germany (which includes East Germany since 1990), Italy, Luxembourg, Denmark, Ireland, the United Kingdom, and Greece. The analysis in the sequel therefore concentrates exclusively on these countries.

The variables used in the empirical analysis which follows include information about respondents' age, education, household income, marital status, gender, political views, and opinions about the benefits of European Union membership⁴. For some preliminary analyses not reported here, further information about individuals' perceptions of the state of the economy, their happiness, and their degree of pride in their own country was also used. The Eurobarometer therefore represents a fairly rich source of data, but much of the import of the present analysis comes from variables that can be grafted onto the basic data source. In particular, using information about the year in which each survey was conducted and about the country in which the respondent resides, data obtained from national statistics concerning macroeconomic variables such as the level and growth rate of national income (denoted in Table 1 by GDP and growth respectively), and the variance of national income growth over the cycle (denoted by turbulence), can be used as independent variables in the analysis.⁵ Data on these variables are obtained from the World Bank's World Development Indicators. Note that, in view of the panel nature of the data, it is possible to include

⁴ The precise question on this last variable, the dependent variable in the analysis which follows, is: 'Generally speaking, do you think your country's membership of the European Community is a good thing? neither good nor bad? a bad thing?' Those responding 'a good thing' are coded as one, all other respondents being coded as zero.

⁵ The variance of national income growth over the cycle might be expected to influence attitudes to Europe in as much as a well stabilised economy might have less to gain from integration than the less well stabilised economy.

fixed effects for both time/survey and country, while also including data that are aggregated to country level (since the latter vary over time).⁶

The data on household incomes need to be converted to a common metric. This is achieved by application of the relevant year's purchasing power parity exchange rates obtained from the World Development Indicators database. Since household income is coded into groups, the midpoint of each group is used; for the uncensored group of the top of the scale, a value 10% above the upper limit of the penultimate band is used. Purchasing power parity exchange rate data are also used to convert Gross national income per capita figures so that they are expressed consistently in terms of US dollars.

Results

The results of a series of fixed effects logit estimations⁷ are reported in Table 1. A number of results stand out. First, support for the European project appears to be stronger amongst those with relatively high levels of education, and also those with relatively high levels of income. Both of these variables may positively influence the degree of contact that individuals have with co-workers in other European states.

Many observers have pointed to a relationship between the age of respondents and their attitudes to Europe. It is clear from the results in Table 1 that a nonlinear

⁶ This does however mean that the model is multilevel in character, and this means that the standard errors reported in Table 1 should be treated with caution. The ridge logit estimator, results for which are reported in Table 2, does not allow computation of standard errors.

⁷ Estimated in Limdep.

relationship between age and support for European integration exists, such that those at the extremes of the age distribution are more supportive than those in the middle. Moreover, it is clear that the minimum has shifted over time⁸; while, early in the period under study, support for Europe was lowest amongst those who had recently come of age, by the end of the period, support was least amongst those who had passed retirement age. In effect, the relationship between support for Europe and respondents' ages has become one that is monotonically decreasing. A regression (not reported here) of (i) age at which support is minimised against (ii) year yields a significant coefficient of 4 on the explanatory variable. This suggests that the relationship between age and attitudes to Europe has become more negatively sloped over time, and indeed, since the coefficient exceeds one, this is not something that can solely be attributed to cohort effects. One might speculate that, while earlier in the period under investigation older people might have held high hopes for the European Union in preventing intra-continental conflicts, as time has passed the extent to which this is at the forefront of people's minds might have declined.

Political orientation is a further variable likely to influence attitudes towards European integration. The evidence provided here suggests that a nonlinear relationship exists, but with those on the right of the political spectrum being more likely to support European integration than others. The scale used in the Eurobarometer studies ranges from 1 (extreme left) through 10 (extreme right).⁹

⁸ The variables age86 through age98 represent interaction terms between the age variable and year dummies 1986, ..., 1998. Using simple calculus, it is easily seen that the turning point of the function linking attitudes to Europe to age in year 1986 was $(0.0043+0.0002)/(2 \times 8.3 \times 10^{-5}) = 27$, while the corresponding figure in year 1998 was $(0.0043+0.0105)/(2 \times 8.3 \times 10^{-5}) = 89$.

⁹ In early work, interaction terms between these political attitude variables and country were included as further explanatory variables, but none was significant.

A clear relationship is apparent between size of country and support for the European project. As might be expected, smaller countries are more supportive of integration, perhaps because membership of a larger group of countries affords them protection against what might otherwise be an economically hostile environment, perhaps because the gains to small countries from accessing relatively large markets exceed those to large countries from accessing relatively small ones (Casella, 1996). Population has been entered into our model as a linear term; a number of nonlinear specifications (including logarithmic and up to a sixth order polynomial specifications) have been tried, but these were typically not terribly successful. Nevertheless, there is evidence that the whole of the relationship between population and attitudes to European integration fail to be captured by the linear specification. (It is notable that the coefficient on country dummies in the fixed effects model reveal a size of country effect, even though population is already included in the specification.)

We now turn to consider the macroeconomic variables grafted onto the dataset from the world development indicators database. The real value of Gross Domestic Product per capita (adjusted to provide purchasing power parity, measured in 1995 US dollars, and averaged over the 10 years up to each data point) negatively affects attitudes to Europe. Relatively poor countries presumably have more to gain from integration, while richer countries may fear that they are required to subsidise regions in less wealthy countries.

Growth (measured by the last 10 years' average annual growth of the GDP per capita variable), however, positively affects attitudes to Europe. One might speculate that

this is the result of satisfaction with economic performance within the context of a Europe that has become increasingly integrated over time.

On the other hand, economic turbulence (measured by the standard deviation and variance over the last 10 years of our GDP variable) has a nonlinear effect on support for European integration. If the standard deviation of GDP growth exceeds two, support for integration declines. This indicates that respondents are averse to large cyclical swings, and may prefer to retain a greater measure of economic sovereignty in order that the national governments may exercise effective stabilisation policies.

The fixed effects on survey are not reported in the table for reasons of space, but they indicate that support for European integration increased during the early 1990s but subsequently fell back somewhat; at the end of the decade, however, support remained significantly higher than it was in the mid-1980s.

Finally we consider the country fixed effects. Germany is revealed to be the country that, after controlling for the other variables in the study, exhibits most support for Europe. But it is closely followed by France, Italy, and the United Kingdom. That the last of these should appear to be less Eurosceptic than, say, Luxembourg or Ireland, is something of a surprise; but it is a result that should be treated with some caution in light of the observations made earlier about the linearity of our population variable.

The pattern of support for European integration across countries is very marked, with larger countries exhibiting more support than smaller countries (according to the

coefficients on the country dummies). This in itself is puzzling, and warrants further investigation. In particular, it implies that the population variable is failing to capture the whole impact of country size on attitudes toward Europe. This may not be altogether surprising, in view of the fact that population changes slowly and that there is therefore likely to be multicollinearity between the population variable and the country dummies. In order to investigate this issue further, we appeal to a methodology that has been devised by Le Cessie and Van Houwelingen (1992). This combines within one estimator the benefits of the limited dependent variable logit and the ridge estimator which has frequently been used in least squares contexts as a fix (albeit an imperfect one) for multicollinearity.

As initially formulated by Hoerl and Kennard (1970) ridge regression involves adding a constant to each diagonal element of the design matrix.¹⁰ More recently, Hertz *et al.* (1991) have demonstrated that this is asymptotically equivalent to weight decay models that can be estimated using maximum likelihood methods. Le Cessie and Van Houwelingen build on this insight to demonstrate that, for the case of logistic regression, the ridge estimator may be given by

$$l^\lambda(\beta) = l(\beta) - \lambda \Sigma \beta_j^2$$

where λ is the ridge parameter and where $l(\beta)$ is the likelihood associated with the binary logit, that is

¹⁰ The design matrix is the matrix that is inverted in order to produce the variance matrix. This inversion is key to the solution of ordinary least squares regression models.

$$l(\beta) = \sum_i \{Y_i \log p(X_i) + (1-Y_i) \log [1-p(X_i)]\}$$

Here Y is the binary dependent variable, X is the vector of covariates, and $p(X_i)$ is the logistic probability function, $p(X_i) = \exp(X_i\beta) / [1 + \exp(X_i\beta)]$. They also provide first and second derivatives of this likelihood so that it may be evaluated using standard Newton-Raphson methods.

The estimator developed by Le Cessie and Van Houwelingen has been incorporated into software developed by Whitten and Frank (1999) and others. This software, known as Weka (the Waikato Environment for Knowledge Analysis), is essentially a machine learning program, but statistical procedures have been incorporated within it, notably the ridge estimator for logistic regression which has been developed by Xin Xu. The Weka software is freely downloadable from <http://www.cs.waikato.ac.nz/~ml/weka/index.html>. Unfortunately, Weka is unable to handle the large data size that has been used heretofore in the present study. This being the case, a random sample of about 10% of the observations has been generated using the random selector operation within SPSS; this generates a new, reduced, sample size of 23,043.

Building on the background provided above, Table 2 reports the results of repeating the logit analysis. Results are reported both for the case in which the ridge parameter is set to zero and the case in which it is set to $\frac{1}{2}$. The results obtained in the latter case, compared with the former, are quite striking. In particular, the coefficient on the country dummies all move markedly in the direction of zero. The constant is also much reduced, and the coefficients on the economic variables all rise in absolute

magnitude. It would appear that, once multicollinearity is controlled for, a large part of the inter-country dispersion in attitudes to Europe can be explained away by reference to the remaining variables in the analysis.

Conclusions

The process of European integration continues to be a matter that is hotly debated in many member countries. It is clear that the benefits or otherwise of further integration vary according to the economic circumstances of nations, at the macroeconomic level, and also of individuals, at the microeconomic level. In comparison with wealthier countries, individuals in less affluent countries may feel that they have more to gain from membership of the EU. Those in richer countries may, by way of contrast, feel disadvantaged by the subsidies that are offered to other regions.

Meanwhile, good economic performance - both in terms of high growth and low or moderate cyclical volatility - generates a level of satisfaction with a country's economic performance amongst its citizens. For those countries that have, for many years, been members of the European Union, the feelgood factor generated by positive economic performance might translate into support for further European integration.

The analysis in the present paper covers Eurobarometer studies up to the end of the 1990s. More recently a primary issue within Europe has been the single currency.

Further research is needed in order to establish whether the findings of the present study remain robust in the context of a Europe in which most member states share the same currency while some others have at present eschewed this option.

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Table 1 Logit results: dependent variable is perceived benefit of EU membership

variable	β (t stat)	variable	β (t stat)	variable	β (t stat)	variable	β (t stat)	variable	β (t stat)
constant	6.8684 (8.97)	income	6.1×10^{-6} (8.81)	age87	-0.0008 (0.46)	age94	-0.0042 (2.48)	Netherlands	-5.2006 (8.52)
male	0.0003 (0.87)	population	-9.7×10^{-8} (10.40)	age88	-0.0035 (2.04)	age95	-0.0063 (3.35)	Luxembourg	-6.6286 (8.93)
age	-0.0043 (2.22)	turbulence	-0.3809 (9.71)	age89	-0.0065 (4.43)	age96	-0.0090 (6.20)	Italy	-1.9462 (8.47)
age ²	8.3×10^{-5} (5.03)	turbulence ²	0.0914 (9.04)	age90	-0.0086 (5.05)	age97	-0.0082 (5.95)	Denmark	-6.8163 (9.71)
education	0.0954 (52.88)	GDP	-5.5×10^{-5} (9.20)	age91	-0.0082 (5.41)	age98	-0.0105 (6.56)	Ireland	-6.8108 (9.42)
politics	0.0815 (30.46)	growth	0.2427 (21.49)	age92	-0.0090 (6.13)	France	-2.1842 (9.95)	UK	-2.8840 (12.96)
politics ²	-0.0008 (31.37)	age86	-0.0002 (0.13)	age93	-0.0074 (4.72)	Belgium	-6.4647 (9.85)	Greece	-6.2793 (9.33)
log likelihood = -129563.5			restricted log likelihood = -141673.9			number of observations = 231149			

Note: Dummy variables for each study are also included in this specification.

Table 2 Logit and ridge logit results, 10% sample: dependent variable is perceived benefit of EU membership

variable	β	variable	β	variable	β	variable	β	variable	β
constant	6.2651 0.6363	income	0 0	age87	0.0003 0.0009	age94	-0.0068 -0.0060	Netherlands	-5.4281 -0.8445
male	0.0007 0.0007	population	0 0	age88	-0.0047 -0.0040	age95	-0.0051 -0.0044	Luxembourg	-7.1836 -1.6481
age	0.0031 0.0025	turbulence	-0.3793 -0.4121	age89	-0.0073 -0.0066	age96	-0.0090 -0.0083	Italy	-1.6410 0.0397
age ²	0 0	turbulence2	0.0699 0.0709	age90	-0.0052 -0.0045	age97	-0.0055 -0.0048	Denmark	-7.1783 -1.9233
education	0.0980 0.0984	GDP	0 0	age91	-0.0103 -0.0096	age98	-0.0089 -0.0082	Ireland	-6.4495 -1.0310
politics	0.0929 0.0907	growth	0.2092 0.2355	age92	-0.0052 -0.0046	France	-2.2077 -0.5628	UK	-2.5855 -0.9597
politics ²	-0.0009 -0.0009	age86	-0.0029 -0.0022	age93	-0.0080 -0.0073	Belgium	-6.6360 -1.7091	Greece	-6.0843 -1.0540

number of observations = 23043

Note: See note to Table 1 above. The software used in this estimation does not produce standard errors or t statistics; indeed no method of computing such statistics has yet been proposed in the literature for the case of ridge logit. For each variable, the upper coefficient relates to a logit with a ridge parameter of zero, while the lower number refers to a logit with a ridge parameter of 0.5. A zero value for the ridge parameter would give a standard logit estimator; various values of the ridge parameter have been tried in work not reported here, and the finding that, as the ridge parameter increases, the magnitude of the country dummies is reduced is representative.